

the Census Block or grid level), while the Hatfield sponsors only *plan* to disaggregate data and produce results at the wire center level. See ¶ 22. Indeed, Hatfield 2.2.2 does not produce results either at the wire center or the Census Block Group level, while Hatfield 3 only produces reports at the density group or wire center level for a specific company in a given state. And from what we can tell, the wire center reports have very limited utility. Only the BCPM has accounted for cost variations by accurately targeting subsidy dollars to the Census Block Group level.

In addition to Hatfield 3's inability to report results at the CBG level, it cannot produce results at a state level, multistate company level, or on nationwide basis. Operationally, the model must be loaded company by company within each state. This does not seem an effective approach for a nationwide model.

B. Modeling Of Network Investments (¶¶ 31-51)

1. Hatfield's "Big Bang" Approach to Designing a Network Is Not Sound

Another key defect of the Hatfield approach is its erroneous assumption that all network investment will be made at once -- the so-called "scorched node" theory of network deployment, or what we like to call the "Big Bang" theory. In fact, a new network will never be rebuilt or replaced instantaneously. Instead, networks have been and will be built in a series of steps, not by a massive change out. In real life, carriers deploy switches to meet expected demand in the relative near term; they only increase switch and related capacity as the growth actually occurs.

Contrary to this model of growth, Hatfield assumes that a carrier will purchase and deploy an entire network at once. The model ignores the fact that a prudent investment strategy requires that the network be deployed in stages as demand materializes. Indeed, new facilities-based competitors will (or should) be even more cautious than in the past about how quickly they build

network infrastructure, because they will face uncertainty about how large their market share ultimately will be.

This fundamental flaw in the Hatfield model must be remedied if the model is to approach an accurate estimate of network deployment costs. Contrary to the staff's conclusion (§ 39), the CPM accurately estimated the current and forward-looking cost of loop plant. The imagined "loop plant that would be incurred by an efficient provider" (*id.*) is the existing LEC network. We challenge anyone to design a real network that is more efficient than ours to serve all customers and not just high density customers. Into the foreseeable future, the placement of plant will mirror what exists now. Therefore, the BCPM appropriately relies on existing loop deployment patterns to model future networks.

2. Hatfield's Approach to Loop Plant Sharing Is Wrong (§§ 45-46)

Hatfield 2.2.2 -- and what we know of Hatfield 3 -- also fail correctly to model how loop plant is *shared*. §§ 45-46. Hatfield 2.2.2's assumption that all facilities are shared equally by three utilities was not only "simplistic" (§ 46), it was wrong. Not all structure is shared, and the extent of sharing in rural areas may be completely different from that in urban areas. Hatfield 3 takes the notion sharing to an absurd level by assuming that all poles are shared four ways.

Sharing percentages cannot be calculated in this way. All poles are not shared four ways. Sharing differs by type of plant -- new vs. old, aerial vs. underground (cable in conduit) or buried. Hatfield's ritualistic use of a constant sharing percentage simply ignores all of this diversity, with Hatfield 3 taking an even more extreme view than did Hatfield 2.2.2. Because "different assumptions about sharing of structure costs can . . . have a significant effect on estimated model costs" (§ 46), Hatfield's errors significantly underestimate LEC costs.

3. We Urge the Commission To Issue Data Requests To Switch Vendors
(¶¶ 49-50)

We agree with the staff that actual switch data will render our proxy model output even more accurate. ¶¶ 49-50. However, as the staff points out, much switch price information, especially information about discounts, remains proprietary. ¶ 49. Given these restrictions, the BCPM switch data was based on the best available surrogate for vendor-discounted cost (*i.e.*, Bellcore's SCIS data). However, if the Commission is uncomfortable with the source of the data, the Commission should issue data requests directly to switch vendors, and grant the information provided in response proprietary treatment. The model sponsors could then -- subject to appropriate nondisclosure agreements -- enter this information in the models and resolve any lingering concerns about the accuracy of the models' switch expense data.

C. Modeling of Expenses (¶¶ 52-72)

1. Capital Expenses (¶¶ 53-63)

The staff asks for justification "for the use of tax depreciation rates in a forward looking cost study." ¶ 55. We used tax depreciation because the difference between book and tax lives will result in deferred taxes. These deferred taxes represent capital that is available to a company to use, and which therefore must be incorporated into the model. We believe this is standard financial practice among many companies, including telephone companies. We agree with the staff that "models should rely on market-determined costs for debt and equity as well as debt-equity ratios chosen by firms." ¶ 57.

As for depreciation, the BCPM's approach on economic lives is the appropriate one. In the California Universal Service proceeding,¹⁰ the CPUC found that Pacific's average economic depreciation lives of 12 years were appropriate because "the longer lives are difficult to justify in an environment of local exchange competition."¹¹ The CPUC also opined that "The economic life depreciation method should be used because it is consistent with . . . forward looking cost principles"¹² The Hatfield approach to depreciation assumes plant lives that are far too long.

Finally, we disagree strongly with the staff's charge that differences in the Hatfield expense results and LECs' actual ARMIS reports may be the result of "inefficient overinvestment decisions by incumbent carriers." ¶ 63. LECs have not overinvested; to the contrary, they have made prudent investment decisions in full view of (and often at the behest of) regulators in order to comply with service level requirements and fulfill their obligations as carriers of last resort. If it were true that we were inefficient and had engaged in overinvestment, facilities-based providers would be entering the market and competing on cost with incumbents. This is not happening in the local market.

2. Operating Expenses (¶¶ 64-69)

The Hatfield model compares apples to oranges in calculating expense levels, thereby understating expenses by as much as 65%. See ¶ 65. Hatfield uses *embedded* plant to determine expense ratios, and then applies these ratios to their *forward-looking* investments. The Hatfield sponsors then make things worse by multiplying their understated expenses by an additional

¹⁰ *Re Rulemaking on the [California Public Utilities] Commission's Own Motion Into Universal Service and to Comply With the Mandates of Assembly Bill 3643*, Decision 96-10-066 *mimeo* Oct. 25, 1996, 1996 Cal. PUC Lexis 1046 (quoted excerpts attached hereto as Attachment C).

¹¹ *Id.* at 142.

¹² *Id.* at 269 (conclusion of law 78).

“forward-looking discount factor.” In the end, the model produces results for some accounts that are below 35% of actual, current expenses for items in those accounts. Hatfield 3 compounds the problem by bring some accounts to a mere 25% of actual.

The Hatfield model’s approach of tying expenses to investment also underreports expense levels. See ¶¶ 65, 67. Just because a capital investment amount changes does not necessarily mean that the expense associated with that investment will change. For example, where a proxy model calculates expense based simply on investment, if a vendor changes a price for equipment, the model incorrectly changes the expense associated with maintaining that equipment. There is no relationship, however, between the capital cost of a switch -- or a change in that cost -- and the expense, such as wages, of maintaining that switch. Instead, expense should be related to investment only where a statistical analysis indicates the relationship makes sense; in other cases, expense should be related to line counts.

We agree with the staff that service expenses “differ by type of customer” and that these differences should be reflected in the models. ¶ 67. Indeed, customer service expenses for residence customers are much higher than for business. Residence customers generally order one line at a time or require maintenance one line at a time, creating more labor intensive service needs; businesses generally place multi-line orders which spread the cost of labor over a greater number of lines. Further, residence customers cause higher billing inquiry costs than do businesses. Unlike the Hatfield model, the BCPM has the capability to take these differences into account.

Finally, we object to the staff’s proposal to set model costs based on the “lowest observed cost” of any company. ¶ 68. This approach would produce results reflective only of the company with the lowest cost, would ignore differing service requirements of individual jurisdictions, and would fail to account for the fact that even an efficient carrier’s expenses may vary due to weather

patterns or storm damage. We are particularly sensitive to these expenses given recent flooding in California.

3. Treatment of Joint and Common Costs (§§ 70-72)

The staff opines that the models “do not currently offer adequate justification for their calculation of forward-looking joint and common costs.” § 72. We agree that no current proxy model accurately determines these joint and common costs. Proxy models are not necessary to the calculation of joint and common costs, as such costs have already been calculated -- or are susceptible to calculation -- in cost studies.

In the California unbundling proceeding, for example, the CPUC and intervenors (including AT&T and MCI) intensely scrutinized Pacific’s forward-looking cost studies, and the CPUC adopted these costs with only minor adjustments.¹³ Included in these forward-looking costs were forward-looking joint and common costs. Thus, we have already calculated joint and common costs for purposes of unbundled network element pricing, and need not rely on proxy models for this purpose.

VI. CONCLUSION

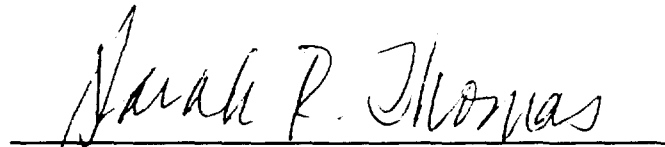
The BCPM can and should be used to spread subsidy dollars for universal service among small geographic areas, so that subsidies best reflect the cost of providing service in high cost areas. The BCPM is far superior to the Hatfield model in performing this task.

¹³ *Rulemaking on the [California Public Utilities] Commission’s Own Motion to Govern Open Access to Bottleneck Services and Establish a Framework for Network Architecture Development of Dominant Carrier Networks*, Decision 96-08-021, *mimeo* rel. Aug. 2, 1996, 1996 Cal. PUC Lexis 841, at 20 (quoted excerpts attached hereto as Attachment B).

Proxy models are not a panacea, however, and should not be used for reasons other than spreading subsidy. They should only be used in the universal service docket to disaggregate the fund, since actual results at a small geographic level cannot be obtained. For unbundled elements, actual cost studies exist, or can be undertaken as necessary, to set prices. In the end, using models to set access and unbundled network element pricing will be a solution inspired by Rube Goldberg -- complicated and interesting, but not very efficient.

Respectfully submitted,

PACIFIC BELL

A handwritten signature in cursive script, reading "Sarah R. Thomas", written over a horizontal line.

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Date: February 18, 1997

ATTACHMENT - A

DECLARATION OF RICHARD D. EMMERSON

I. INTRODUCTION AND SUMMARY

My name is Richard D. Emmerson. I am the President and CEO of INDETEC International, Inc. INDETEC International, Inc. provides consulting and training services to international telephone companies, Lucent Technologies, the United States Telephone Association (USTA), Bellcore, Commission staff members, partners and managers of large accounting and consulting firms, and interexchange companies (these services were formerly offered through INDETEC Corporation and Emmerson Enterprises, Inc.). I have a Ph.D. in economics from the University of California at Santa Barbara. During the past 20 years, I have taught in the Department of Economics at the University of California, San Diego, and I have consulted, testified, and taught courses on economic issues in telecommunications. Much of my consulting and teaching is about incremental cost study methodologies. My staff and I have conducted over one hundred projects involving incremental costs in telecommunications. My business address is 341 La Amatista, Del Mar, CA 92014.

I have prepared this declaration for Pacific Telesis in partial response to the Notice of Proposed Rulemaking ("NPRM") in CC Docket No. 96-262, released on December 24, 1996.¹ Pacific Telesis has asked me to comment on certain issues raised in the NPRM. These issues fall into the following four areas: (1) prescribing efficient rate structures for access services, (2) relying on market forces to govern access charges, (3) preventing anticompetitive conduct, (4) estimating the incremental costs of access services, and (5) pricing to recover common costs and embedded costs. The first area includes efficient pricing to recover common line costs, establishing multi-part tariffs for local switching, and charging direct trunking customers for the costs of tandem-switched transport. The

¹ In the Matter of Access Charge Reform, CC Docket No. 96-262, Notice of Proposed Rulemaking (rel. December 24, 1996).

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INDETEC
International

January 29, 1997

second area involves identifying the determinants of market power and establishing criteria for relaxing or removing regulation, and the third area encompasses placing ceilings on access prices to prevent so-called price squeezes. The fourth and fifth areas concern specifying economically appropriate methods of measuring incremental costs and paying for depreciation reserve deficiencies and stranded costs.

My principal conclusions and recommendations may be summarized as follows:

1. The current rate structure for exchange access services is economically inefficient. Ideally, the Commission should permit Pacific Bell and other incumbent local exchange companies ("LECs") to increase the subscriber line charge ("SLC") and to deaverage SLCs geographically. At a minimum, SLCs should be geographically deaveraged. If the SLC is not increased, then common line costs should be recovered by bulk billing interexchange carriers ("IXCs") on the basis of presubscribed lines.
2. The Commission should allow Pacific Bell and other incumbent LECs to establish multi-part tariffs for local switching rates. Multi-part rate schedules for local switching services correspond more accurately to the variation in the incremental costs of such services. Specifically, the Commission should permit Pacific Bell and other incumbent LECs to charge a combination of flat rates and usage charges for local switching and differentiate usage charges on the basis of call setup and subsequent minutes.
3. Direct-trunked transport customers should have to pay for the additional tandem switching costs incurred because Pacific Bell and other incumbent LECs must supply extra capacity to carry overflow traffic at peak periods. A standby charge applied to direct-trunked transport is an economically appropriate method of paying for the added costs imposed by maintaining a security margin for overflow traffic.
4. The key to securing effective competition in access services is overcoming the entry-detering effect of sunk costs associated with local exchange facilities, and the Telecommunications Act of 1996 ("the Act") has provided this key in the form of its open access provisions. Pacific Bell has already entered into eighteen interconnection arrangements through voluntary negotiation and compulsory state arbitration. The Commission should allow the implementation of these arrangements to bring effective competition to access services and not resort to additional tests and standards.

Richard D. Emmerson

INDETEC
International

January 29, 1997

5. Most of the competitive tests set out in the NPRM are unnecessary, misleading and unduly burdensome. Market share is an unreliable indicator of market power and completely misleading in regulated industries. Market demand elasticity is simply not an indicator of market power. In contrast, supply elasticity is a good indicator of market power, but measuring supply elasticity in access services is unnecessary. The Act's open access provisions have already increased that elasticity. Evidence of actual access prices falling below an administratively determined price cap is an improper test of competitiveness. Finally, using performance standards such as price-cost margins to assess the extent of market power over access services would lead to "endless and inconclusive wrangling." Access prices exceeding incremental costs are not indicative of the absence of competition but consistent with the need for LECs such as Pacific Bell to recover their substantial shared and common costs.
6. The Act's open access standards and Pacific Bell's progress in concluding interconnection contracts constitute ample evidence that entry barriers affecting access services have fallen considerably. This fact strongly suggests that a reasonable two-phase test of competitiveness for access services includes: (1) in-place interconnection arrangements and (2) evidence that local exchange competitors are using such arrangements. Pacific Bell has already passed the first phase of this test with its eighteen completed interconnection contracts, several of which satisfy Section 271's 14-point competitive checklist.
7. The NPRM's apparent concern about call externalities is misplaced. Call externalities do not impart appreciable differences in market power over originating and terminating access services.
8. LECs such as Pacific Bell do not have an inherent competitive advantage when selling both local exchange and access services. Arguments to the contrary ignore the opportunity cost of foregone access revenues.
9. Pacific Bell and other incumbent LECs have neither the incentive nor the ability to conduct anticompetitive price squeezes. Pacific Bell could not execute such a squeeze because it lacks the requisite market power. Even if Pacific Bell held significant market power, it could not successfully squeeze competitors out of the industry. With no prospect of success, Pacific Bell lacks the incentive to even attempt a price squeeze. Regardless, existing safeguards are sufficient to prevent Pacific Bell from imposing a price squeeze on its future interLATA competitors.

10. When estimating costs for pricing purposes, the various cost proxy models as they are configured today produce estimates that are inherently inferior to the estimates produced by the standard incremental cost methodology such as Pacific Bell uses. On the other hand, the methodology behind the best of today's cost proxy models, if not the specific results, may be suitable for estimating universal service subsidy requirements or for providing general cost "benchmark" information.
11. The Commission should not promulgate rules forcing access prices to equal TSLRIC or artificially limiting access markups. First, unless the Commission allows the SLC to rise, incumbent LECs like Pacific Bell must recover common line costs through charges assessed against IXCs. Second, Pacific Bell and other incumbent LECs must recover unattributable shared and common costs throughout the full array of their services, including exchange access and unbundled network elements. Third, incumbent LECs like Pacific Bell must also recover through access and interconnection charges the embedded costs which they have prudently incurred fulfilling their public service obligations, including depreciation reserve deficiencies and stranded costs.
12. The difference between the prices charged for access services and unbundled network elements should not exceed the difference in incremental costs. Maintaining unbundled network element prices below a level justified by the incremental cost differential seriously misallocates resources and inefficiently threatens the earning power of Pacific Bell and other incumbent LECs.

II. RATE STRUCTURE MODIFICATIONS

A. Common Line

Section III of the NPRM solicits comments on alternative carrier common line ("CCL") charge structures. It concludes that the current CCL structure is economically inefficient because it does not correspond to the way LECs incur common line costs.² I agree. The most efficient method of recovering common line costs is through flat monthly charges paid by end users. These flat monthly rates should also vary with geographic differences in loop costs. Consequently, the Commission should remove or raise the caps

² NPRM, ¶ 58.

placed on the end user common line ("EUCL") charge, or SLC, and permit incumbent LECs like Pacific Bell to deaverage SLCs geographically. The current usage sensitive CCL charges levied against IXCs constitute an inefficient "tax" on long distance calling. Moreover, geographically uniform SLCs in the face of large geographic differences in loop costs are inherently discriminatory and thereby unsustainable in a competitive environment.

To the extent the Commission requires that IXCs continue to subsidize end users by paying for common line costs through exchange access charges, the IXCs' payments should be assessed against some measure of retail purchases, that is, bulk billed. Bulk billing corresponds more closely to a retail tax and would thereby improve productive efficiency. The economically preferred method of bulk billing is to assess IXCs on the basis of presubscribed lines rather than interstate revenues. LECs incur loop costs when households and businesses decide to subscribe to telephone service, and these costs do not vary with their subsequent usage. Thus, assessing IXCs on the basis of presubscribed lines coincides with how LECs incur loop costs.

Economic efficiency requires that prices reflect the manner in which suppliers incur the costs of producing goods and services. Not only should price levels be high enough to cover incremental costs but price structures should also match cost structures.³ Common line costs are properly attributable to the services which cause them to be incurred—private line, special access, Centrex and the subscriber access component of basic local exchange service. Common line costs are appropriately recovered from such services and not from long distance and switched access. Even if one incorrectly believes that common line costs are true common costs, these costs are undeniably nontraffic sensitive ("NTS"). If feasible, NTS costs should be recovered through flat rates, not usage sensitive charges. Traffic (or

³ Roger Sherman, *The Regulation of Monopoly* (New York: Cambridge University Press, 1989.), pp. 111-115.

usage) sensitive charges like the current CCLC should be used to recover traffic sensitive costs.⁴

Loop costs also differ widely with differences in geography. These geographic differences include customer density, terrain, depth of bedrock and water tables, and urban congestion. Most importantly, loop costs vary greatly with customer density; the greater the number of subscribers per square mile, the lower are loop costs per line. Uniform SLCs in the face of such disparity discriminate against customers in denser, less costly areas and give IXCs a strong uneconomic incentive to build competing local exchange facilities in those areas. In addition, as required by the Act, Pacific Bell will geographically deaverage its rates for unbundled loops. Pacific Bell's unbundled loop rates are lower where customer density is higher. Deaveraged rates for unbundled loops render potential entrants' attraction to dense exchanges even stronger. This attraction is further strengthened by the fact that customer density tends to coincide with revenue concentration; high volume users tend to reside in dense exchanges. As a result, incumbent LECs like Pacific Bell are extremely vulnerable to competitive inroads if uniform SLCs remain mandatory. Pacific Bell and other incumbent LECs will lose many of their most profitable customers; while their public service obligations mean that they must continue to serve the least profitable and the unprofitable.

Insofar as interstate services must continue paying for CCL costs, the associated exchange access charges should have two key features. First, CCL charges should be assessed as closely as possible to the end user. A CCL charge is equivalent to a tax on long distance services. While all taxes distort efficient outcomes, taxes applied at upstream stages in a vertical chain of production are particularly distorting. Exchange access is essentially an input into the production of long distance services; therefore, it is useful to think of LECs as standing upstream in a vertical chain. Assessing CCL charges against

⁴ With permission of the author, this paragraph borrows liberally from Steve G. Parsons, "The Economic Necessity of an Increased Subscriber Line Charge (SLC) in Telecommunications," *Administrative Law Review*, Vol. 48, No. 2, (Spring 1996), pp. 235-236.

part rate schedules often track more precisely the incremental costs of a service having various dimensions, such as in the provision of electricity,⁸ and multi-part tariffs for local switching are no exception.

C. Local Switching: Two-Part Tariffs for Connection and Usage

Again, I agree with the reasoning set out in the Section III regarding a combination of flat rates and usage sensitive charges for local switching. Economists refer to such a combination as a two-part tariff, a special case of multi-part tariffs. In my opinion, Section III correctly supposes that connection to the local switch and traffic traversing the switch (usage) are two different cost parameters of local switching service. Other economists besides myself have investigated the structure of production costs in telecommunications and reached similar conclusions. For example, Professor Roger Sherman of the University of Virginia concludes that in telephone service: "Connection and usage are then two causes that warrant separate charges."⁹

The incremental costs of local switching vary with both the number of connections to the switch and the traffic going across those connections. The incremental costs of switch connections (ports and line cards) do not vary with usage, but the incremental costs of switch usage vary with the amount of traffic traversing the switch. Thus, establishing a two-part tariff for local switching would improve economic efficiency. Local switching charges consisting of a flat rate for connections and a variable rate for usage would reflect more accurately the variation in incremental costs.

D. Local Switching: Call-Setup Charges

Establishing separate usage sensitive charges would also represent a two-part tariff. Like separate charges for switch connection and usage, a fixed and a variable charge for switch usage more accurately reflect the incremental costs of local switching. Each long

⁸ William Vickrey, "Some Objections to Marginal-Cost Pricing," in Richard Aron *et. al.*, (eds.) *Public Economics: Selected Papers by William Vickrey* (New York: Cambridge University Press, 1994), p. 218.

⁹ Sherman, *op. cit.*, p. 111.

IXCs essentially "taxes" telecommunications services twice, once when levied by the upstream LECs and again when passed along in the retail prices of the downstream IXCs.

Double taxation in a vertical chain of production is a well-known problem in public economics. Efficiency in production dictates that governments apply commodity taxes such as the CCL charge as close to the final stage of production as possible; that is, at the retail level.⁵ Thus, in the interest of productive efficiency, the Commission should allow LECs to levy CCL charges against some measure of retail purchases, such as IXCs' shares of presubscribed lines or interstate revenues.

Second, CCL charges should have a flat rate structure corresponding to the way LECs incur loop costs. In other words, the associated charges should not constitute a disguised means of assessing interstate services on the basis of usage. To repeat, costs that do not vary with usage should not be recovered through usage sensitive charges, and loop costs are unrelated to usage. Therefore, the Commission should allow LECs to assess CCL charges on the basis of IXCs' share of presubscribed lines rather than interstate revenues. Basing CCL charges on presubscribed lines breaks the link with usage and corresponds more closely to how LECs incur loop costs.

B. Local Switching: Multi-Part Tariffs

Section III also solicits comments on two fundamental proposals for restructuring local switching rates. First, Section III notes that a combination of flat rates and usage sensitive charges for local switching may better reflect cost causation principles.⁶ Second, Section III requests comment on prescribing separate access charges for the initial and subsequent periods of a call.⁷ In effect, Section III is asking whether a multi-part schedule for local switching rate elements would improve efficiency, and the answer is yes. Multi-

⁵ P. A. Diamond and J. A. Mirrlees, "Optimal Taxation and Public Production, I: Production Efficiency," *American Economic Review*, Vol. 61 (March 1971), pp. 8-27.

⁶ NPRM, ¶¶ 72 and 73.

⁷ NPRM, ¶ 76.

distance call imposes costs that are independent of duration, distance, time of day or day of the week. These costs result from establishing and keeping open a network path. Thus, a two-part tariff consisting of a fixed charge per message and a variable charge per minute more closely conforms to the structure of local switching costs.

E. Local Transport: Charging Direct-Trunked Transport Customers for Tandem-Switched Transport Capacity

The final area of my comments regarding rate structure modifications concerns recovering tandem switching costs in charges for direct-trunked transport.¹⁰ Pacific Bell and other incumbent LECs provide direct-trunked transport customers the ability to redirect overflow traffic over tandem-switched routes. It is my understanding that the nature of overflow traffic is essentially random; that is, its occurrence is uncertain. Uncertain direct-trunked overflows require that Pacific Bell and other incumbent LECs maintain sufficient capacity to meet tandem-switched transport demands at peak periods plus a security margin for the overflow traffic. This security margin is necessary to avoid interruptions in the service provided tandem-switched transport customers or, in the alternative, blocking direct-trunked transport customers' overflow traffic. On efficiency grounds, customers with random demands should pay for the extra cost incurred due to the uncertain nature of their capacity requirements.¹¹ Thus, direct-trunked transport customers should be assessed a standby charge reflecting the added cost of accommodating their overflow traffic.

III. CRITERIA FOR RELAXING OR REMOVING ACCESS PRICING CONSTRAINTS

Sections IV and V of the NPRM propose two different sets of criteria for relaxing or removing the regulatory controls governing interstate access rates. Both sections advance criteria aimed at testing the effectiveness of competition.¹² Calling them

¹⁰ NPRM, ¶ 90.

¹¹ Louis Philips, *The Economics of Price Discrimination* (New York: Cambridge University Press, 1983), pp. 141-143.

¹² NPRM, §§ 149 and 161.

"competitive factors," Section IV suggests a single set of four criteria consisting of three structural tests and a single behavioral test.¹³ In contrast, Section V proposes to deregulate access charges in two phases using two sets of criteria.¹⁴ Referring to barriers to competitive entry, Phase 1 advances a long list of criteria apparently aimed at assessing the strength of *potential* competition and resting on three performance tests and several open access standards.¹⁵ Phase 2's criteria seem intended to gauge the extent of *actual* competition and resort also to structural tests as well as achieving universal service reform objectives and regulatory enforcement standards.¹⁶

The Commission need not rely upon the many competitive tests set out in Sections IV and V to permit flexible pricing of interstate access services. Most of the competitive tests set out in these two sections are unnecessary, misleading and unduly burdensome. The key to securing effective competition in access services is overcoming the entry-detering effect of the substantial sunk costs associated with local exchange facilities. Consequently, the attainment of open access to local networks constitutes the relevant test of competitiveness. In terms of Section IV's competitive factors, the relevant test is the success of the Act's open access provisions in increasing the elasticity of supply of access services. Voluntary negotiations and arbitration proceedings under the auspices of the California Public Utilities Commission ("CPUC") have already culminated in eighteen interconnection arrangements between Pacific Bell and competitive local exchange companies ("CLECs"). The Commission should allow the implementation of these arrangements to bring effective competition to access services and not resort to additional tests and standards.

¹³ NPRM, ¶¶ 150, 156-159.

¹⁴ NPRM, ¶ 161.

¹⁵ NPRM, ¶¶ 163, 170 and 173-175.

¹⁶ NPRM, ¶¶ 164 and 202-207.

Richard D. Emmerson

INDETEC
International

January 29, 1997

A. Structural Tests

Translated into economic terms, the first three competitive factors mentioned in Section IV of the NPRM are elements of market structure. Market structure refers to "... those characteristics of the organization of a market that seem to exercise a strategic influence on the nature of competition and pricing within the market."¹⁷ The three structural factors discussed in Section IV are market share, market demand elasticity and the elasticity of market supply. Economists and antitrust scholars have advocated using these three factors in combination to assess the degree of market power in antitrust cases.¹⁸

The Commission would make a serious mistake if it made pricing flexibility for access services contingent upon either market share or market demand elasticity. Market share is an unreliable indicator of market power. Market demand elasticity indicates only whether control over price may produce economically harmful results, not whether appreciable market power is present or absent. Many vigorously competitive markets, particularly in staple agricultural commodities, are characterized by very inelastic demand.

In contrast, supply elasticity is a more reliable indicator of market power. Supply elasticity measures the ease of entry and competitive expansion, but constructing elaborate tests of entry barriers affecting exchange access is not necessary. Congress has already established open access standards in the Act which have substantially lowered entry barriers into the local exchange; that is, which have significantly increased the supply elasticity of access services. Thus, progress toward attaining full implementation of these standards constitutes a reasonable test of competitiveness in exchange access services.

Without an examination of other factors, market share is a misleading indicator of market power, especially for regulated firms. A leading textbook in industrial organization economics explains:

¹⁷ Joe S. Bain, *Industrial Organization* (New York: Wiley, 1968), p. 7.

¹⁸ William M. Landes and Richard A. Posner, "Market Power in Antitrust Cases," *Harvard Law Review*, Vol. 94, No. 5, (March 1981), pp. 937-996.

Market shares alone are not completely determinative of whether a firm has market power, and additional analysis of the economic conditions is necessary before one can reach a conclusion about market power. For example, if entry is easy, then the industry pricing will be severely constrained, regardless of whether one firm currently has a large market share.¹⁹

Reliance on market share as an indicator of market power is particularly troublesome in regulated markets wherein (1) prices may be maintained below efficient levels, and (2) entry or exit restrictions are in place. The same scholars who have advocated using market share and demand and supply elasticities in antitrust cases warn that their analysis is inappropriate in regulated industries:

"To the extent that regulation is effective, its effect is to sever market power from market share and thus render our analysis inapplicable. . . Regulation may increase a firm's market share in circumstances where only the appearance and not the reality of monopoly power is created thereby."²⁰

In summary, a large market share is not only an insufficient test of market power, but in regulated industries it is also an irrelevant test.

Whatever the degree of control conferred by a large market share, such control cannot be lasting and important unless protected by barriers to entry. A barrier to entry may be defined as a cost that potential entrant firms will incur entering an industry but need not be borne by established sellers.²¹ Barriers to entry primarily come in two forms—artificial and natural. Artificial entry barriers are creatures of government: occupational licensure, exclusive franchises, patents, copyrights and trademark protection. Section 253 of the Act has removed the artificial entry barriers that once protected Pacific Bell and other incumbent LECs.

¹⁹ Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization* (Glenview, Ill.: Scott, Foresman, 1990), p. 739.

²⁰ William M. Landes and Richard A. Posner. "Market Power in Antitrust Cases," *Harvard Law Review*, Vol. 94 (March 1981), pp. 975-976.

²¹ George J. Stigler, *The Organization of Industry* (Chicago: University of Chicago Press, 1968), p. 67.

Natural entry barriers include sunk costs. Sunk costs arise from asset specificity. Asset specificity means that some of the investment costs of entering a market may not be recoverable except with considerable loss or after considerable delay. Sunk costs are especially likely to be a source of entry barriers in industries that require substantial investments in non-redeployable assets, such as local exchange facilities, and are subject to economies of scale or scope.²² Given the role of sunk costs in producing entry barriers, the relevant inquiry concerning pricing flexibility for exchange access services is the openness of access achieved through voluntary negotiations and compulsory state arbitration under the Act.

B. Behavioral Tests

Section IV contains the single behavioral test of competition proposed in the NPRM.²³ This test proposes that the Commission rely upon evidence that an incumbent LEC has priced its access services below the level permitted by the federal price cap ceiling. Such a test of competitive behavior is potentially misleading. The relevant economic test is pricing at or near the competitive level, not pricing below some administratively determined ceiling like a price cap. The cap may be higher or lower than the rate that would prevail in a competitive market. Even a properly formulated behavioral test of the rate that would prevail under competition is impractical. In a multi-product industry subject to economies of scale and scope like telecommunications, determining the competitive level depends upon having rare and costly information on individual firm demand elasticities.

²² For an explanation of how sunk costs may deter entry, see Daniel F. Spulber, "Deregulating Telecommunications," *Yale Journal on Regulation*, Vol. 12 (1995), p. 45.

²³ NPRM, ¶ 159.

IV. MARKET-BASED APPROACH TO ACCESS REFORM

A. Performance Tests

The first three of the eight Phase 1 criteria proffered in the NPRM's Section V also constitute impractical and potentially dangerous measures of competitiveness. These three tests are (1) unbundled element prices based on economic costs, (2) transport and termination charges based on additional costs, and (3) wholesale prices based on reasonably avoidable costs. The cost-price relationships implicit in these criteria represent a part of the efficiency dimensions of market performance. Market performance refers to the end results produced by the firms in a market and may be measured in several dimensions.²⁴ The father of industrial organization economics, Professor Edward S. Mason of Harvard University, long ago warned of the impracticality of performance tests:

No one familiar with the statistical and other material pertaining to the business performance of firms and industries would deny the extreme difficulty of constructing from this material a watertight case for or against the performance of particular firms in particular industries.²⁵

Likewise, industrial organization economist and former Michigan State University President Walter Adams warns of the dangers of employing performance tests:

Application of the performance standard, in a court of law or before an administrative tribunal, affords unusual opportunities for dilatory tactics and stratagems of confusion. It opens a Pandora's box of procedural obstructionism which is conducive neither to the scientific use of economic evidence nor to the expeditious determination of the issues in the light of such evidence. Given the inexactness of economic knowledge, even the more "objective" components of performance—such

²⁴ Bain, *op. cit.*, pp. 10-11 and 373-376.

²⁵ Edward S. Mason, "The Current Status of the Monopoly Problem in the United States" in Richard B. Heflebower and George W. Stocking (eds.), *Readings in Industrial Organization and Public Policy* (Homewood, Ill.: Irwin, 1958), p. 390.

as profit levels—can be the subject of seemingly endless and inconclusive wrangling.²⁶

The Commission should heed the warnings of these two distinguished economists when it comes to testing the vigor of competition for access services with price-cost margins. Prices in excess of incremental cost are not ruled out for firms in industries characterized by substantial economies of scale and scope, yet such industries may be vigorously competitive in the sense of being contestable. However, the price-cost margins in contestable markets will be no higher than necessary to maintain the long-run financial health of the firms in the industry.²⁷

Four facts pertinent to this proceeding emerge from the theory of contestable markets. First, incumbent LECs like Pacific Bell are subject to important economies of scale and scope.²⁸ Second, economies of scale and scope in local telecommunications produce significant shared and common costs.²⁹ These shared and common costs must be recovered by prices in excess of incremental costs. Third, prices exceeding incremental costs are not ruled out in contestable markets even if the prices involved are for intermediate goods and services. Intermediate goods are inputs used in downstream production processes, and in telecommunications, incumbent LECs' exchange access services, unbundled network elements and other interconnection services are intermediate goods. Finally, the open access standards established in the Act are meant to overcome the

²⁶ Walter Adams, "The Case for Structural Tests" in James W. Brock and Kenneth G. Elzinga (eds.), *Antitrust, the Market, and the State: The Contributions of Walter Adams* (Armonk, NY: M. E. Sharpe, 1991), p. 163 (emphasis in the original).

²⁷ Elizabeth E. Bailey and William J. Baumol, "Deregulation and the Theory of Contestable Markets," *Yale Journal on Regulation*, Vol. 1 (1984), pp. 121-122.

²⁸ Almarin Phillips, "The Reintegration of Telecommunications: An Interim View," in Michael A. Crew (ed.) *Analyzing the Impact of Regulatory Change in Public Utilities* (Lexington, MA: Lexington Books, 1985), p. 8. See also Surrebuttal Testimony of William J. Baumol, Before the Public Service Commission of the State of Missouri, Case Nos. TO-84-223, TO-85-126 and TO-85-130, *et. al.*, October 23, 1985, pp. 11-12.

²⁹ Alfred E. Kahn and William B. Shew, "Current Issues in Telecommunications Regulation: Pricing," *Yale Journal on Regulation*, (1987), reprinted in Alexander C. Larson and Mark E. Meitzen (eds.) *Cost and Pricing Principles for Telecommunications: An Anthology* (Washington, D.C.: United States Telephone Association, 1990), p. 56. See also Hunt, L.C. and E.L. Lynk, "Divestiture of Telecommunications in the UK: A Time Series Analysis," *Oxford Bulletin of Economics and Statistics*, Vol. 52 No. 3 (Aug. 1990), p. 244.

entry barriers stemming from the combination of scale and scope economies and heavy sunk costs.

B. Open Access Standards

The Act has already substantially lessened the impact that sunk costs might have on the condition of entry into the local exchange. The Act's provisions regarding open access greatly facilitate entry into the local exchange segment of the industry. These open access provisions include compulsory interconnection, collocation, unbundling, and resale. Reciprocal interconnection for the purpose of terminating local traffic allows customers of new entrants to reach and be reached by the incumbent's customers. Unbundled loops, local switching, and transport give newcomers easy access to the incumbent's existing customers. Collocation, resale, and access to rights-of-way further ease entry by overcoming any necessity to sink costs in duplicate facilities. In combination, the Act's open access provisions have significantly reduced or eliminated entry barriers associated with heavy sunk costs.

Consistent with the policy implications of contestable market theory, the Act attempts to reduce any entry barriers that might arise from sunk network facilities by giving potential competitors open access.³⁰ Under the Act, establishing open access has involved imposing certain duties and obligations and relying on voluntary negotiations and arbitration by the various state regulatory commissions. In the case of Pacific Bell, that process has produced interconnection arrangements satisfying the Act's 14-point competitive checklist. Pacific Bell's significant progress toward opening up its network strongly suggests that the following two-phase open access test is reasonable: (1)

³⁰ Bailey and Baumol, *op. cit.*, p. 124. See also Elizabeth E. Bailey, "Deregulation of Contestable Markets: Application of Theory to Public Policy," in Thomas G. Gies and Werner Sichel (eds.), *Deregulation: Appraisal Before the Fact* (Graduate School of Business Administration, University of Michigan, 1982), p. 4, and Paul W. MacAvoy, Daniel F. Spulber and Bruce E. Stangle, "Is Competitive Entry Free? Bypass and Partial Deregulation in Natural Gas Markets," *Yale Journal on Regulation*, Vol. 6, No. 2 (Summer 1989), pp. 222-223.

interconnection arrangements are in place and (2) CLECs are using the unbundled network elements and other interconnection services available under these arrangements.

Pacific Bell has already met the first phase of the foregoing open access test. According to information supplied by Pacific Bell, it has completed eighteen local interconnection contracts with CLECs through voluntary negotiation and compulsory arbitration. Several of the agreements meet the 14-point competitive checklist contained in Section 271 of the Act. Two contracts have been the subject of mandatory arbitration before the CPUC. On the basis of this information, it seems reasonable to conclude that the Act's various open access provisions are achieving their purpose.

C. Regulation of Terminating Access

Section VIII cites arguments asserting that LECs exert greater market power over terminating access service than over originating access and suggests that this greater power may justify differences in regulatory treatment.³¹ There is no firm factual foundation for believing that LECs hold greater market power over terminating access; therefore, the differences in regulatory treatment considered in this section are unjustified.

The purported factual basis noted in Section VIII appears to rest on what economists refer to as the call externality. Externalities occur when persons who are not parties to a transaction receive benefits or incur costs as a result of that transaction. Professor Lester D. Taylor of the University of Arizona explains: "... a completed call necessarily impinges on a second party, and an externality is thereby created."³² In other words, the recipient of a telephone call benefits from the call even though the recipient is not a party to the transaction between the caller and the carrier.³³

³¹ NPRM, ¶¶ 271-276.

³² Lester D. Taylor, *Telecommunications Demand: A Survey and Critique* (Cambridge, MA: Ballinger, 1980), pp. 15-16.

³³ With 800 calls, the caller benefits even though the caller is not a party to the transaction between the recipient and the carrier.